

NATURAL RESOURCES - WATER RESOURCES

Town of Eastham Goals and Performance Standards

The Cape Cod Commission, through its Regional Policy Plan for Barnstable County, has established overall planning goals and minimum performance standards for water resources. Eastham's goals and minimum performance standards are consistent with the Regional Policy Plan.

- 2.1.1 Goal:** To maintain the overall quality and quantity of Eastham's groundwater to ensure sustainable supply of untreated high-quality drinking water and to preserve and restore the ecological integrity of marine and fresh surface waters.

Minimum Performance Standards

Classification System and Minimum Performance Standards: The Regional Policy Plan establishes a water resources classification system to manage and protect Cape Cod's water resources. The water resources classification system recognizes four primary water resource areas and their respective recharge areas: Wellhead Protection Areas, Fresh Water Recharge Areas, Marine Water Recharge Areas, and Potential Water Supply Areas. The classification system also recognizes areas where water quality may have been impaired from existing development or where water quality is unusually pristine. Where these areas overlap with any of the resource areas above, improvement or preservation of water quality is a major goal.

- 2.1.1.1 Except as otherwise specified in the classification system below, all development and redevelopment shall not exceed a 5-ppm nitrogen loading standard for impact on groundwater based on the methodology contained in Cape Cod Commission Nitrogen Loading Technical Bulletin 91-001.
- 2.1.1.2 All development and redevelopment shall comply with the Minimum Performance Standards outlined in the following water resources classification system. If a property is located where two classifications overlap, the more stringent standards shall apply. The water resources classification system is illustrated on the Cape Cod Water Resources Classification Maps I and II, dated January 10, 2002, in the Regional Policy Plan, as amended and described below:

A. Wellhead Protection Areas: Consist of areas that contribute groundwater to existing public and community water supply wells. These areas shall be delineated by a consistent method and recognized by the Commission in conjunction with state standards for Zone IIs (as defined in 310 CMR 22.02).

1. The maximum loading standard for nitrogen impact on groundwater shall be 5 ppm for development and redevelopment unless a cumulative impact analysis indicates a more stringent loading standard is necessary.

2. Development and redevelopment that involves the use, treatment, generation, storage, or disposal of hazardous wastes or hazardous materials, with the exception of household quantities, shall not be permitted.
3. Public and private sewage or treatment facilities with Title 5 design flows greater than 10,000 gallons per day shall not be permitted in these areas, except as provided in subsection E.2 below and subject to Minimum Performance Standards 2.2.1 through 2.2.5.
4. Uses prohibited in Zones II by state regulations shall not be permitted in these areas.
5. Development and redevelopment shall adopt a turf and landscape management plan that incorporates water conservation measures and minimizes the amount of pesticides and chemical fertilizers through best management practices.

B. Fresh Water Recharge Areas: Consist of recharge areas to freshwater ponds as mapped by a standard hydrogeologic assessment or other method acceptable to the Commission.

1. In order to limit phosphorus inputs, no subsurface disposal systems shall be permitted within 300 feet of maximum high water of freshwater ponds, as determined by the high groundwater adjustment methodology in the Commission's Technical Bulletin 92-001, unless the applicant demonstrates by a groundwater study that groundwater from the site does not discharge into the pond or a tributary.
2. Development and redevelopment may be required to delineate the groundwater recharge areas to potentially affected freshwater ponds and conduct a phosphorous loading assessment in order to identify and mitigate the project's adverse impacts. For ponds where pond management strategies have not been developed or implemented, DRIs may be required to make a monetary contribution toward the development or implementation of appropriate assessment work or management strategies.
3. Public and private sewage treatment facilities may be used within Fresh Water Recharge Areas subject to subsection E.2 and Minimum Performance Standards 2.2.1 through 2.2.5 below.

C. Marine Water Recharge Areas: Consist of recharge areas to marine embayments as mapped by the Commission, on Cape Cod Water Resources Classification Map II dated January 10, 2002, as amended.

1. In watersheds where the critical nitrogen load has been determined, development and redevelopment shall not exceed the identified critical nitrogen-loading standard for impact on marine ecosystems. In watersheds where the critical nitrogen load has

not been determined, development and redevelopment shall be required to make a monetary contribution to determine the flushing rate of the embayment in order to calculate the critical nitrogen-loading rate. DRIs may be required to make a monetary contribution toward the development or implementation of appropriate nitrogen management strategies.

2. In watersheds where existing watershed development exceeds identified critical loading standards or where there are documented marine water quality problems in the associated embayment, including, but not limited to, those embayments shown on the Cape Cod Water Resources Classification Map II, development and redevelopment shall maintain or improve existing levels of nitrogen loading. This may be achieved by providing wastewater treatment for the development or redevelopment and additional treatment capacity for nearby land uses, installation of alternative denitrifying technologies for existing septic systems in the recharge area, and/or an equivalent contribution towards a municipal or watershed effort that achieves the intent of a “no net increase” policy.

3. In watersheds with Commission-approved watershed nutrient management plans, nitrogen loading from development and redevelopment shall attain the nitrogen loading limit specified by the plan, but in no case shall nitrogen loading exceed 5 ppm.

4. Public and private sewage treatment facilities may be used within Marine Water Recharge Areas subject to subsection E.2 and Minimum Performance Standards 2.2.1 through 2.2.5 below.

D. Impaired Areas: Consist of areas where groundwater may have been degraded by point and non-point sources of pollution, including but not limited to areas with un-sewered residential developments where lots, on average, are less than 20,000 square feet; landfills, septage, and wastewater treatment plant discharge sites; and high-density commercial and industrial areas and those down-gradient areas where the groundwater may have been degraded by these sources. For the purpose of these standards, all certified Growth/Activity Centers and Growth Incentive Zones shall be classified as Impaired Areas.

1. Development and redevelopment shall generally meet a 5-ppm nitrogen loading standard for impact on groundwater, but the standard may be increased where it can be demonstrated to the Permitting Authority and the Commission that such increase will cause no adverse impact on ponds, wetlands, marine waters, public or private drinking water supply wells, and potential public water supply areas as identified in Section F below.

E. Water Quality Improvement Areas: Consist of Impaired Areas that are located within Wellhead Protection Areas, Fresh Water Recharge Areas, and Marine Water Recharge Areas. In such areas, improvement of water quality is a major goal.

1. Development and redevelopment shall not exceed the nitrogen loading standards for Wellhead Protection Areas or an identified marine water quality standard as applicable. Where existing development within the watershed exceeds the identified loading standard or where there are documented marine water quality problems, there shall be, at a minimum, no net addition of nitrogen loading from development and redevelopment.
2. Use of public and private sewage treatment facilities shall be as follows: Within Water Quality Improvement Areas that are in Wellhead Protection Areas public and private sewage treatment facilities may be used to remediate existing problems; within Water Quality Improvement Areas that are in Fresh Water and/or Marine Water Recharge Areas, public and private sewage treatment facilities may be used in conjunction with any development or redevelopment. Sewage treatment facilities and their collection and discharge areas shall maintain the hydrologic balance of the aquifer and demonstrate that there are no negative ecological impacts to surface waters. All such facilities shall be subject to Minimum Performance Standards 2.2.1 through 2.2.5 below.
3. Development and redevelopment in Growth/Activity Centers and Growth Incentive Zones within Water Quality Improvement Areas which have been identified as requiring comprehensive wastewater treatment solutions may be required to provide a monetary contribution towards community wastewater facility planning or implementation efforts.

F. Potential Public Water Supply Areas: Consist of areas which have been identified by the Commission on the Cape Cod Water Resources Classification Map I dated January 10, 2002, as amended, and future well sites and their associated recharge areas which have been identified by towns, water districts, or private water companies. Potential Public Water Supply Areas may be removed from consideration provided that supporting information demonstrates to the Commission demonstrating that they will not be considered as potential water supply areas.

1. No development shall be permitted within 400 feet of an identified future well site.
 2. The maximum nitrogen-loading standard for Potential Public Water Supply Areas shall be 1 ppm for development.
 3. Within an identified Potential Public Water Supply Area, the same standards A.2 to A.5 apply as in Wellhead Protection Areas above.
- 2.1.1.3 Development and redevelopment shall identify their proposed wells and existing private wells on abutting properties within 400 feet and assess the impact of the development on the water quality of these wells and all other existing wells that may potentially be affected by the proposed development. Septic systems and other sources of contamination shall be sited to avoid contamination of existing or proposed wells.

- 2.1.1.4 Conversion from seasonal to year-round uses in FEMA flood A-zones or within 100 feet of wetlands shall demonstrate that the project will not have adverse impacts on groundwater or adjacent surface waters and wetlands.
- 2.1.1.5 Developments of Regional Impact which withdraw more than 20,000 gallons of water per day shall demonstrate through a groundwater study that the project will not have adverse impacts on groundwater levels or adjacent surface waters and wetlands. The study shall include mapping of surface water morphology and comparison of existing and affected water-table fluctuations.

Other Development Review Policies

- 2.1.1.6 Water withdrawals and wastewater discharges should be managed so that they do not adversely affect surface water resources, wetlands, private wells, or the safe yield of the aquifer.
- 2.1.1.7 Development and redevelopment should use water-conservation technologies or other strategies to obtain a 40% reduction of water use.
- 2.1.1.8 Development and redevelopment should utilize alternatives to synthetic chemical fertilizers and pesticides in favor of organic and biological methods.
- 2.1.1.9 Development and redevelopment should increase aggregation and improve the level of treatment of existing wastewater flows.
- 2.1.1.10 Development and redevelopment should attain greater groundwater or surface water protection than provided for in the Minimum Performance Standards.
- 2.1.1.11 Development and redevelopment should attain zero discharge of wastewater through non-water-based waste treatment technologies or reuse of wastewater for irrigation.
- 2.1.1.12 Development and redevelopment should submit Chapter 21E site assessments or other water quality information indicating the condition of the site relative to hazardous waste.
- 2.1.1.13 Development in USGS-identified Potential Water Supply Areas should be avoided.
- 2.1.1.14 Development and redevelopment in Water Quality Improvement Areas subject to Marine Water Recharge Areas should seek to reduce nitrogen loading by providing for the removal of 2 kilograms of nitrogen for each kilogram added.
- 2.1.1.15 The development of public or community water supply systems should be encouraged for areas serviced by private wells in Impaired Areas.

- 2.1.2 Goal:** To encourage the use of public and private sewage treatment facilities in appropriate areas where they will provide environmental or other public benefits and where they can be adequately managed and maintained.

Minimum Performance Standards

- 2.1.2.1 Private treatment facilities may be constructed only if there are no feasible public treatment facility options available within three years of the proposed date of construction of a project.
- 2.1.2.2 All public and private sewage treatment facilities shall be designed to achieve tertiary treatment with denitrification that meets a maximum 5-ppm total nitrogen discharge standard either through advanced treatment to achieve 5 ppm in the effluent or 5 ppm in groundwater at the down-gradient property boundary.
- 2.1.2.3 The construction of private sewage treatment facilities (PSTFs) shall not allow development to occur at a higher density than would be allowed by local zoning.
- 2.1.2.4 The construction of PSTFs shall be consistent with municipal capital facilities plans where they exist. Municipalities shall have the opportunity to assume ownership and maintenance responsibilities for such facilities where desired by the municipality.
- 2.1.2.5 PSTFs shall not be constructed in FEMA V-zones and floodways, Areas of Critical Environmental Concern (ACECs), wetlands and buffer areas, barrier beaches, coastal dunes, or critical wildlife habitats. PSTFs may be constructed in FEMA A-zones only to remediate water quality problems from existing development within such A-zones and consistent with Minimum Performance Standards 2.2.2 and 2.2.6, except as provided in Minimum Performance Standard 2.2.11.
- 2.1.2.6 The long-term ownership, operation, maintenance and replacement of PSTFs shall be secured as a condition of approval in accordance with Commission, state, and local guidelines.
- 2.1.2.7 Applications for approval of public and private sewage treatment facilities shall include a plan for sludge disposal.

Other Development Review Policies

- 2.1.2.8 When allowing additional development in areas where existing high-density development or large numbers of failing septic systems have led to public health or water quality problems, the Commission and/or Eastham may require PSTFs or DEP-approved alternative systems with enhanced nitrogen removal to be installed as a remedial measure.

- 2.1.3 Goal:** To protect the overall water quality of the aquifer and its resources by providing adequate storm water management and treatment.

Minimum Performance Standards

- 2.1.3.1 New direct discharge of untreated storm water, parking-lot runoff, and/or wastewater into marine and fresh surface water and natural wetlands shall not be permitted.
- 2.1.3.2 Storm water shall be managed and infiltrated on site to minimize runoff and maximize water quality treatment. Storm water treatment designs shall be based upon a 25-year 24-hour storm and attain 80% total suspended solids removal and at a minimum be consistent with Massachusetts Storm water Policy Guidelines.
- 2.1.3.3 Development and redevelopment shall use best management practices such as vegetated swales and non-structured wetland detention basins for treatment prior to infiltration. Non-structured wetland detention basins and vegetated swales may be counted as open space within Wellhead Protection Areas.
- 2.1.3.4 Structured detention basins, infiltration basins and galleries may be used in Growth Incentive Zones provided that Minimum Performance Standards for storm water are met.
- 2.1.3.5 Infiltration basins or other storm water leaching structures shall maintain a two-foot separation between maximum high water table and point of infiltration.
- 2.1.3.6 Development and redevelopment shall submit a storm water maintenance and operation plan for approval by the Commission. The plan shall, at a minimum, include a schedule for inspection, monitoring, and maintenance and shall identify the party responsible for plan implementation.
- 2.1.3.7 In Wellhead Protection Areas, storm water systems for land uses which have a high risk of contaminating groundwater, such as vehicle maintenance areas and loading docks, shall install mechanical shut-off valve or other flow-arresting device between the catch basin or other storm water-capture structure draining this area and the leaching structures.

Existing Conditions

The Lower Cape Water Management Task Force between 1992 and 1998 studied the water supply and demand situation on outer Cape Cod. The Task Force's final report summarizes a wealth of data about water quality and quantity in Lower Cape towns, which was collected in this and some previous studies. The study demonstrated that most private wells in the area provide good quality drinking water, but that the increasing development density negatively influences the quality. Cross-contamination, whereby effluents from nearby contamination

sources intercept wells, often causes problems. Current and future water demands were assessed, and criteria for siting potential public water supply wells were developed.¹

Eastham's Water Supply System: Eastham is fortunate to be essentially the sole user and major beneficiary of the Lower Cape aquifer's Nauset Lens (Map 3). The northern-most reaches of the Lens are shared with Wellfleet and are used by the National Park Service to provide water for their headquarters area. Route 6 is seen to traverse the crest of this lens, which has a maximum water table elevation of 17 feet above mean sea level. With groundwater flows that are generally perpendicular to the lens' contour lines, this location makes the Route 6 corridor particularly hazardous with respect to the wide dissemination of contamination. That a large number of small volume wells are located within this corridor may have significant implications for economic sustainability if contamination from a variety of potential sources leads to their failure.

Water Delivery System: Eastham's water delivery system consists entirely of private wells. Most of these are on-site domestic water supply wells drawing about 200 gallons per day (gpd). Some are Small Volume Wells, serving various businesses, condominiums, and office buildings for which the withdrawal volumes can be substantially larger.² Currently, there are known to be 50 such wells of which seven (7) are non-transient/non-community public water supply systems, and 43 are transient/non-community public water supply systems. Only a few services near the Orleans town line are connected to the Orleans public water supply.

Septage Disposal: No areas of Eastham are currently served by public sewers. Only on-site sewage disposal systems are used throughout the town, varying from cesspools to Title V septic systems. In recent years, a number of Alternative Septage Treatment installations have been deployed to reduce nitrate nitrogen concentrations in effluent discharges. Eastham is a member of the Tri-Town Septage Treatment facility located in Orleans serving Eastham, Orleans, and Brewster. Much of Eastham's pumped sewage is processed here.

Potential Well Sites: Two potential sites have been identified for development of municipal water supply wells should such service become necessary.³ These sites are identified on figure WR-2 and located in Water Resource Protection Zoning District "G", and located in Well-field Protection Zoning District "H". District G lies in an area containing several town-owned "woodlot" parcels, and is relatively unthreatened by other land uses. District H lies in ca.120 acres of town-owned land, which was tested in 1970 as a possible municipal well-field site with a potential yield of 1 million gpd.⁴

¹ Sobczak, B. and T. Cambareri. 1998. Water Resources on Outer Cape Cod. – Final report of the Lower Cape Water Management Task Force. Cape Cod Commission. Barnstable, MA.

² "Small Volume Wells" are defined and classified by the Code of Massachusetts Regulations, 310 CMR 22.00 under the Department of Environmental Protection (DEP) regulations as small community wells, nontransient/noncommunity wells, and transient noncommunity wells. These water systems are defined as "Public Water Systems" [310 CMR 22.02(8)] if the system is used for the provision to the public of piped water for human consumption, if such a system has at least 15 service connections or regularly serves an average of at least 25 individuals for at least 60 days of the year.

³ Zoto, G. A. and T. Gallagher, eds. 1988. Cape Cod Aquifer Management Project Final Report. Boston, MA.

⁴ Whitman & Howard, Inc. 1970. Report on Proposed Water System: Eastham, Massachusetts. HUD Project no. P-Mass-3423P. Boston, MA.

Map 3: Eastham's Water Supply

Located within the National Seashore, District H is currently relatively unthreatened by other land uses. District H also contains a large number of vernal pools that are otherwise uncommon in the Town, ecologically significant, and protected by state and federal law.

In 1997, Eastham acquired a 64-acre plot of land (known as the “Roach Property”) as open space “for general municipal purposes, to be used for whatever the town deemed most suitable”⁵ (see Map 4). A recent plan to develop this property for various public benefit applications envisions ca. one-third of it as a public water supply area, and the Lower Cape Water Management Task Force identified this property as a potential secondary water supply area. Detailed evaluation of the site’s suitability for this purpose remains to be done. However, the current USGS study of the Lower cape aquifer will provide further information about these and other potential public well sites.⁶

Potential Contamination Sources: The most common potential contamination sources for on-site domestic water supply wells in Eastham are the on-site sewage disposal systems on the same or adjacent lots. In several areas of Eastham there is a high density of disposal systems which can impact the water quality in surrounding wells. A consequence of this situation is the increase in nitrate loading which is summarized in the “Analysis” section. Concern about this trend prompted the Town to establish, in 2002, an annual nitrate screening program of all of Eastham’s wells whereby each year one-third of them are sampled. The data collected are anticipated to provide information about the evolution of contamination patterns that can guide planning and regulatory actions. Other existing and potential contamination sources include underground gasoline storage tanks located mostly along Route 6 and buried on-site domestic fuel tanks.

In recent years, the gasoline additive methyl tertiary-butyl ether (MTBE) has been found in Eastham’s drinking water. MTBE, a substantial component of reformulated gasoline, is used to improve the fuel’s combustion, thereby reducing air pollution. Unfortunately, MTBE’s attributes of water solubility and extremely chemical stability make it a particularly stubborn pollutant. While the compound’s deleterious health effects are suspected but not proven, its unpleasant odor at very low concentrations and appearance at levels above the federal limit of 70 parts per billion (ppb) at some locations in Eastham have caused much public concern.

At this time, three MTBE contamination sources have been identified in Eastham. Under the jurisdiction of the Massachusetts Department of Environmental Protection, effective containment and remedial actions are underway at all three sites. This experience indicates that Volatile Organic Compounds (VOCs), of which MTBE is an example, are contaminants that need to be carefully monitored once their presence has been established. VOCs have also appeared in wells at locations that make the landfill (capped during 1993 through 1997) their suspected source. In these cases, aromatic and chlorinated compounds that are known to be carcinogens have been detected, albeit below their federally mandated public drinking water standards. This situation prompted the Board of Health to institute a regulation that mandates VOC testing for all new construction and changes in the ownership of properties. From a public health perspective, it reinforces the need to monitor the quality of water on a Town-wide basis.

⁵ Horsley & Witten, Inc. 2001. Draft: Roach Property Land Use Management Plan. Sandwich, MA.

⁶ USGS. 1999. Proposal.

Map 4: Potential Well Sites

Analysis

The Town's main concern continues to be to maintain an adequate supply of drinking water and preserve its currently good quality for the foreseeable future. Steps that will help to ensure this outcome are:

1. Enforcement by the Board of Health and other responsible Town bodies, of bylaws and regulations designed to minimize the potential for water contamination. Given the demonstrated relationship between water quality and development density, particular caution must be exercised in the evaluation of requests for variances where increased use of a property is a factor.
2. Reduction of the use of chemicals such as fertilizers and pesticides that inevitably contaminate groundwater.
3. Active encouragement of water conservation.
4. Education and the dissemination of information about water protection will sensitize the public to the importance of water quality and what can be done to preserve it.
5. Monitoring, on a systematic and regular basis, the quality of Eastham's well water. Knowledge of contaminant levels and their evolution over time can identify areas of concern and guide remedial interventions.

Additional measures can include the judicious use of alternative septic systems and special regulations for environmentally hazardous situations. At the same time, the Town will take measures to ensure that areas which can serve as potential public water sources are legally protected as such, their capacity assessed, and additional areas which could serve as public water sources are identified.

As part of the Lower Cape Water Management Task Force study, the nitrate and sodium levels were measured between 1985 and 1994 for a large number of wells (more than 6,500) in Eastham, Wellfleet and Truro. The increasing nitrate levels observed during this period gave early indications of the continuing decline in water quality. To further explore this trend and its implications, the Water Resources Advisory Board initiated an annual program of voluntary nitrate screening of Eastham's well water in 1999. The results for ca. 7% of the Town's wells in the first two years and 20% in 2001 confirmed the continuing, gradual increase in nitrate loading of the water. These data provide evidence that the distribution of nitrate levels is not uniform across the Town, and that elevated levels are clustered in North Eastham.⁷ The primary factors that sustain this trend appear to be further development, intensive use of properties in the summer, and an increasing year-round population.

With respect to commercial point sources of contamination, stringent measures to guard against leakages from gasoline storage tanks are already mandated by law and rigorously enforced.

⁷ Water Resources Advisory Board. 2001. Report on Eastham Water Screening Project 2001. Eastham, MA.

The findings of the voluntary screening program prompted the Water Resources Advisory Board to devise a comprehensive nitrate-monitoring program whereby all of Eastham's wells are tested on a three-year cycle. The implementation of this program, which is anticipated to provide early warnings of potentially serious contamination problems, is underway.

A regulation issued by the Board of Health in 2001 seeks to protect Environmentally Sensitive Areas (ESAs) (such as areas near marshlands, surface waters, tidal flats, etc.) by severely restricting the issuance of variances from septage disposal regulations in these locations. Significantly, areas where clusters of small lots (less than 20,000 square feet) exist are defined as environmentally sensitive.⁸ Another Board of Health regulation requires annual water testing for rental properties.⁹

Freshwater ponds serve as a window on our drinking water supply. At the same time, they provide opportunities for recreational activities. Careful monitoring of these resources is imperative to protect against accelerated eutrophication and disruption of the normal aquatic processes. As impacts on groundwater from the growth of the resident population increase, repercussions for ponds can be expected. This situation calls for vigilance and increased attention to the mitigation of non-point contribution from the groundwater to Eastham's freshwater ponds. Periodic monitoring for nutrients, elimination of the use of phosphate cleaning products, and upgrading of sewage disposal systems within 300 feet of ponds should be considered. For more information about Eastham's freshwater wetlands, see the Wetlands, Wildlife, and Habitat chapter of this plan.

Protection of coastal embayments is a key environmental issue in Eastham. Embayments are where shellfish live and much of the finfish population in the surrounding ocean originates. Each septic system located on the Lens adds contaminants to the groundwater, which is then discharged into the embayments to the detriment of aquatic life. Non-point source contaminants from septic systems can include metals from plumbing, phosphate from detergents, and nitrogen from toilet wastes. Among these contaminants, nitrogen is of primary concern for coastal waters as it is the nutrient that tends to limit coastal productivity. Too much nitrogen leads to ecosystem-wide changes as the underlying plant communities are altered. Coastal ecosystems around Cape Cod are particularly sensitive to excessive nitrogen where it has been implicated in the decline of shellfish and finfish productivity, the loss of eelgrass beds, and increased algal growth.

To ensure that coastal water quality is protected from excessive nutrients, adequate documentation of the sensitivity of individual embayments to non-point source pollution must be developed, and a management plan must be established and implemented to counteract deleterious effects. Once the critical nitrogen-loading rate has been determined, appropriate non-point source remediation strategies should be developed. The Towns of Orleans and Eastham together with the National Seashore are cooperatively studying wastewater management and nutrient loading of the Town Cove/Nauset Marsh/Salt Pond ecosystem; these studies might result

⁸ Eastham Board of Health Regulation. 2001. Section F(1) and F(2): Environmentally Sensitive Area.

⁹ Eastham Board of Health Regulation. 1988. Section 4A: Rental of Premises to be used for Human Habitation.

in recommendations for increased protections of this precious area.¹⁰ For more information about the coastal resources of Eastham, please see the Coastal Resources chapter of this plan.

Nearly as important to the health of Eastham residents and visitors as the various studies advocated in this chapter are monitoring actions that should be taken by individual homeowners throughout the town. The Massachusetts Water Supply Policy Statement (1987) declares, “The primary responsibility for adequacy and safety of private water supplies remains with the users and local officials.” Regular basic chemical profiling of wells in Eastham is not mandatory at this time, and might never need to be. However, basic chemical profiling on an annual basis at a minimum should be considered a priority by every homeowner within Eastham. Basic chemical profile testing provides information about a range of contaminants (including nitrates), and is available through the Barnstable County Department of Health and the Environment using collection bottles obtained for a fee through the Eastham Health Department.

Implementation

Recommended Town Actions

- A. Develop water-conservation plans that encourage the installation and use of water-saving devices.
- B. Identify locations of private wells and septic systems, especially in densely developed areas, and undertake assessments to evaluate the need for sewers and/or public water.
- C. Work with the Commission to identify Impaired Areas and Water Quality Improvement Areas to prioritize wastewater treatment upgrades, including identification of appropriate parcels for aggregate treatment and/or discharge facilities for community wastewater treatment.
- D. Work with the Commission and others to identify wastewater infrastructure and legal and institutional needs to address the establishment of wastewater management districts.
- E. Establish or modify local water supply protection bylaws to prohibit hazardous land uses in Wellhead Protection Areas, limiting nitrogen loading to protect ground- and surface water quality, and protect and acquire future water supply areas.
- F. Develop storm water design standards that encourage better treatment within Wellhead Protection Areas.
- G. Encourage and fund water quality monitoring programs especially programs with citizens serving as water quality monitors.

¹⁰ Howes, B.L. 2001. Quantitative Assessment of the Embayments within the Town of Orleans to Support Management and Restoration: Nutrient Loading and Environment Health.

- H. Establish bonus provisions to allow increased development density through their local bylaws/ordinances for development that provides a public benefit such as affordable housing substantially above the required 10% level, or treatment of amounts of sewage from existing non-sewered development.

The Water Resources Advisory Board's recommendations strive to ensure a sustainable supply of drinking water from the present system of individual wells and to preserve the integrity of Eastham's fresh and marine surface waters. They are formulated to conform to guidelines specified in the Regional Policy Plan for Barnstable County. The key elements of these recommendations follow. Elaboration of these recommendations and specific information about responsible agents, priorities and support are given in the Water Resources timetable in the Implementation section.

- Develop short-term and long-term management plans to maintain an adequate supply of potable water.

The components of these plans should include an ongoing water quality monitoring program, hydrogeological studies of sensitive areas such as the Route 6 corridor and specific contaminant release sites, and the specification of suitable remediation measures. The appropriate application of such measures is necessary to enable the Town to maintain the current mode of dispersed supply wells.

- Develop recommendations and support actions which will preserve future options for quality groundwater supply sources.

The identification and protection of potential sites for public water supplies should be continued, and studies such as the one by the USGS that is currently in progress should be supported.

- Assess the need for the designation of additional environmentally sensitive areas where special protective measures for water would be appropriate.

The results of the planned comprehensive water quality monitoring program and other water resources studies would help reveal the need for such areas and actions.

- Develop long-range wastewater management plan.

Increased nitrate loading of the groundwater that has been noted in recent years emphasizes the need to plan appropriate improvements in wastewater treatment.

- Promote and facilitate the use of alternative treatment technology where current systems fail to protect water quality. Support and ensure diligent monitoring and maintenance of alternative septic treatment systems.

Alternative septic treatment systems produce significantly cleaner effluent than Title V and other conventional systems. At the same time, alternative systems require frequent inspection and maintenance to ensure their proper functioning.

- Continue the formulation of bylaws and regulations that will protect water resources.

The recent appearance of contaminants such as MTBE, additional VOC's, and other pollutants in Eastham wells calls for appropriate regulatory actions.

- Expand and improve public education and the dissemination of information about water contamination issues and actively promote water conservation.

Burgeoning interest in water issues highlights the need for providing meaningful information to residents.

- Improve communication and coordination of water resources information: among various Town boards/committees concerned with water resources, and among Eastham, Orleans, Wellfleet, and the National Seashore.

This is a primary role of the Water Resources Advisory Board. While the WRAB is not a regulatory authority and does not normally review site proposals, it should ensure that all agencies which directly affect Eastham water through the course of their normal affairs have the proper information and tools necessary to carry out their missions and protect water resources.

- Develop and implement measures to protect freshwater ponds, wetlands and coastal embayments against the harmful effects of contamination from various sources and recreational uses.

These measures should include protection of tidal flushing which serves to reduce damage-causing alien vegetation.

- Enforce the present 5ppm nitrate-nitrogen loading standard.
- Limit the introduction of chemicals such as road salt, fertilizers and pesticides into the groundwater.

Educational efforts and, if these fail, restrictive regulations should be explored.

See "Water Resources" and "Land Use/Growth Management" in Implementation section.